SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, HIROTSUGU SATOH, a citizen of Japan residing at Kanagawa, Japan have invented certain new and useful improvements in

OPTICAL RECORDING MEDIUM

of which the following is a specification:-

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an optical recording medium that stores software such as

5 application software, and that is distributed from a software distributor to a software user and used in a computer.

2. Description of the Related Art

Generally, software such as application

10 software used in a computer is acquired by a user who obtains a medium such as a CD-ROM storing the software from a software distributor. The software is normally introduced onto a HDD (Hard Disk Drive) of the computer from the medium. If there are not many changes to be

15 made to the program when the software is updated to the latest version or corrected, the software stored on the HDD can be rewritten and updated by obtaining a difference file distributed by the software producer through a network such as the Internet or obtaining a

20 new medium that stores the difference file.

However, in the conventional software introduction and update method, the distributed medium itself cannot be rewritten to update the contents (i.e., software). If the software is deleted and reintroduced

25 into the computer, or if the software is introduced into

another computer, a distributed medium that stores the previous version is temporarily introduced, and an updating program is executed so as to update the software to the latest version. These introduction and

5 update procedures are complicated, which presents a problem in the prior art.

Furthermore, if there are many changes to be made to the software, the user needs to acquire a new medium that stores the software from the software

10 distributor. In such a case, the user takes necessary procedures to acquire the new medium, which might be time consuming.

In a computer into which software is introduced through a medium, the software on the HDD of

15 the computer can be rewritten by connecting the computer to the software distributor via a communication means such as the Internet. In this case, the HDD of a computer into which software illegally copied by a third party has been introduced can be rewritten, and illegal

20 usage of the software cannot be prevented.

If a trouble occurs during the use of software in the computer, the user needs to inform the software producer (or the software distributor) of the trouble and the information concerning the computer currently

25 used. However, it might be difficult for the user or it

might take the user a long time to transmit full information concerning the computer, depending on how knowledgeable the user is about the computer.

5   SUMMARY OF THE INVENTION

It is a general object of the present invention to provide an optical recording medium that can be protected from illegal usage of software, and can simplify the updating process of the software.

10   A more specific object of the present invention is to provide an optical recording medium, with which the latest version of software can be introduced in a normal manner without performing complicated procedures when the difference between the

15   latest version and a previous version of software is small and the software only needs to be temporarily deleted and reintroduced or introduced into another computer, and with which a software user can easily and quickly obtain the latest version of software when the

20   difference between the latest version and the previous version of software is large.

Another specific object of the present invention is to provide an optical recording medium, with which the information concerning the computer

25   currently used can be readily and accurately transmitted

to the software distributor when a trouble occurs during
the use of the software, regardless of how knowledgeable
the user is about the computer, so that the trouble can
be easily dealt with by both the software user and the
5   software producer.

The above objects of the present invention are
achieved by an optical recording medium that is
computer-readable and -writable, and stores software to
be distributed, non-rewritable inherent ID information,
10   and a transmission program for transmitting the inherent
ID information to a software distributor via a
communication means.

The optical recording medium is read by a
computer to start the transmission program, thereby
15   automatically transmitting the inherent ID information
allocated only to the optical recording medium to the
software distributor. Based on the inherent ID
information, the update software and the like can be
received from the software distributor. Here, the
20   software distributor can determine from the non-
rewritable inherent ID information whether or not each
user is a properly registered user. Thus, the software
can be protected from illegal use. Furthermore, since
the optical recording medium is writable, received
25   update software can be written on the optical recording

medium, thereby updating the software on the distributed optical recording medium to the latest version.

The above objects of the present invention are also achieved by an optical recording medium that is
5 computer-readable and -writable, and stores software to be distributed, non-rewritable inherent ID information, and a software update program for rewriting and updating the software by update software transmitted from the software distributor via a communication means in
10 accordance with an authentication judgment result based on the inherent ID information.

This optical recording medium is read by a computer to start the software update program, thereby automatically rewriting and updating the software on the
15 optical recording medium by the update software received via the communication means such as the Internet. Thus, the software recorded on the distributed optical recording medium can be updated to the latest version. Here, the software distributor can determine from the
20 non-rewritable inherent ID information whether or not the user is a properly registered user. Thus, the software can be protected from illegal use.

The above objects of the present invention are also achieved by an optical recording medium that is
25 computer-readable and -writable, and stores software to

be distributed, non-rewritable inherent ID information,

a transmission program for transmitting the inherent ID

information to a software distributor via a

communication means, and a software update program for

5   rewriting and updating the software by update software

transmitted from the software distributor in accordance

with an authentication judgment result based on the

inherent ID information.

This optical recording medium is simply read

10   by a computer so as to start the transmission program

and the software update program. By doing so, the

inherent ID information allocated only to the optical

recording medium is automatically transmitted to the

software distributor, and the software stored on the

15   optical recording medium can be automatically rewritten

and updated by receiving the update software transmitted

from the software distributor in accordance with the

authentication judgment result of the inherent ID

information. Thus, the software stored on the

20   distributed optical recording medium can be

automatically updated to the latest version. For

instance, if there are not many changes between the

latest version and a previous version of software, the

latest version of software can be easily introduced in a

25   conventional manner, without carrying out complicated

processes to delete and reintroduce the software or to introduce the software to another computer. Also, even if there are many changes between the latest version and the previous version of the software, the optical

5 recording medium is simply rewritten and updated, thereby promptly obtaining the latest version of the software. During the above processes, the software distributor can determine from the non-rewritable inherent ID information whether or not each user is a

10 properly registered user. Thus, the software can be protected from illegal use.

Other objects and further features of the present invention will become more apparent from the following description taken in conjunction with the

15 accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the structure of a software management system of one embodiment of the present

20 invention;

FIG. 2 is a schematic view of the structure of an optical disk in accordance with the present invention;

FIG. 3 is a flowchart of a first example of an

25 operation using the optical disk of the present

invention;

FIG. 4 is a flowchart of a second example of an operation using the optical disk of the present invention;

5   FIG. 5 is a flowchart of a third example of an operation using the optical disk of the present invention; and

FIG. 6 is a flowchart of a fourth example of an operation using the optical disk of the present

10   invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following is a description of embodiments of the present invention, with reference to the

15   accompanying drawings.

FIG. 1 shows the structure of a software management system in which an optical recording medium of the present invention is used. This system comprises: a general computer 1 that is used by a

20   software user; a software distributor host computer 2 (hereinafter referred to simply as "host computer 2") owned by a software producer; and a disk rewrite device 3 that is provided by the software producer and situated at a place such as a shop. The general computer 1, the

25   software distributor host computer 2, and the disk

rewrite device 3 are communicably connected to each

other via a communication network 4 that utilizes a

public communication network, privates lines, or the

Internet. The general computer 1, the host computer 2,

5   and the disk rewrite device 3 include communication line

connecting devices 5, 6, and 7, respectively, such as

modems or network cards. The communication line

connecting devices 5, 6, and 7 constitute a

communication unit with the communication network. The

10   disk rewrite device 3 may have an accounting device 8.

The general computer 1 integrally or

separately has an optical disk drive device 9. With the

optical disk drive device 9, the general computer 1 can

read information recorded on an optical recording medium.

15   The optical disk drive device 9 may be a drive that can

record and reproduce, or a read-only drive such as a CD-

ROM drive.

FIG. 2 is a schematic view of the data

structure of an optical disk 10 that is an optical

20   recording medium in accordance with the present

invention. This optical disk 10 stores application

software to be distributed and is distributed to

software users for payment or for free. It is notable

that a rewritable disk such as a CD-RW or CD-R can be

25   used for the optical disk 10, instead of a conventional

read-only disk such as a CD-ROM. It is more preferable to use a rewritable disk such as a CD-RW, but a write-once disk such as a CD-R can be substantially rewritten. Accordingly, no distinction will be made between a CD-RW

5   and a CD-R in the following description of the present invention.

In the writable optical disk 10, a region A in the vicinity of the top stores inherent ID information allocated intrinsically to the optical disk 10. The

10 inherent ID information is recorded in a ROM state in which no rewriting operation can be performed once the data is recorded by the software distributor. A region B that follows the region A stores programs such as a transmission program, a software update program, and a

15 computer information acquiring program. These programs in the region B are also recorded in the ROM state in which no rewriting operation can be performed once the data is recorded by the software distributor. A region C that follows the region B stores main software, such

20 as application software to be distributed, in a rewritable state. A region D that follows the region C is used as a free region. In other words, the regions A and B are ROM regions, and the regions C and D are RAM regions.

25   Here, the program stored in the region B will

be described below. The "transmission program" is

prepared as a part of a "software update program" or a

"trouble information transmission program". By starting

the transmission program, the inherent ID information

5   stored on the optical disk 10 is automatically

transmitted to the host computer 2 via the communication

line connecting device 5, the communication network 4,

and the communication line connecting device 6. As the

"software update program" is started, the optical disk

10   drive device 9 (if it has a recording function) is

actuated, and the software in the region C on the

optical disk 10 is automatically rewritten and updated

with the update software transmitted from the host

computer 2 to the general computer 1 via the

15   communication line connecting device 6, the

communication network 4, and the communication line

connecting device 5. The "computer information

acquiring program" is a part of the "trouble information

transmission program". As the computer information

20   acquiring program is started, the information of the

general computer 1 that is currently using the optical

disk 10 is automatically acquired. This program itself

is known and commercially available. The information to

be acquired by the general computer 1 is used when a

25   trouble occurs, and includes the version information of

the hardware connected to the general computer 1, the OS

software, and the files, for instance. If the "computer

information acquiring program" is started by the

"trouble information transmission program", the

5   "transmission program" has a function to transmit the

acquired information of the general computer 1, as well

as the inherent ID information, to the host computer 2.

As will be described later, the host computer

2 has functions to determine whether or not the

10   transmitted inherent ID information can be authenticated

based on the user registration in the user information

database, and to distribute automatically the update

software if the inherent ID information is authenticated.

In the above structure, if the optical disk 10

15   for distributing software is used, there should be

several example operations performed by the CPUs of the

general computer 1, the host computer 2, and the disk

rewrite device 3. In the following, each example

operation will be described.

20   [First Example]

FIG. 3 is a flowchart of a case where a

software producer (or a software distributor)

distributes the optical disk 10 without distinguishing a

software user with the inherent ID information, and the

25   optical disk drive device 9 used by the software user

can record and reproduce data.

The software user first inserts the optical disk 10 into the optical disk drive device 9, and starts the "software update program" automatically or through a predetermined operation on the general computer 1. The communication unit, which is constituted by the communication line connecting device 5, the communication network 4, and the communication line connecting device 6), is controlled so that the general computer 1 is connected to the host computer 2 corresponding to the software distributor of the optical disk 10 in step S1. The host computer 2 then confirms the connection with the general computer 1 of the software user in step T1.

In the connected state, the "transmission program" stored on the optical disk 10 is started so that the inherent ID information allocated to the optical disk 10 is automatically transmitted to the host computer 2 via the communication unit (i.e., the communication line connecting device 5, the communication network 4, and the communication line connecting device 6) in step S2. In response to the transmission step, the host computer 2 performs a receiving process of the inherent ID information in step T2. The host computer 2 then determines whether or not

the received inherent ID information has been set by the software distributor in step T3. If the received inherent ID information has not been set by the software distributor, the communication is terminated in step T8,

5 and the operation is ended. If the received inherent ID information has been set by the software distributor, the host computer 2 transmits the result to the general computer 1, and requests the general computer 1 to transmit the version information of each of the files

10 that constitute the software corresponding to the inherent ID information in step T4. After the general computer 1 is notified by the host computer 2 that the received inherent ID information has been set by the software distributor in step S3, the general computer 1

15 performs a receiving process of the version information of each file in step S4. After receiving the version information, the general computer 1 compares the received version information with the version information of the corresponding file of the software

20 introduced in the HDD of the general computer 1, thereby determining whether or not a software updating process needs to be performed in step S5. If it is determined in step S5 that no software updating process is required, the general computer 1 notifies the host computer 2 that

25 no software updating process is required in step S6.

The communication is then terminated in step S7, and the operation comes to an end.

Meanwhile, if it is determined in step S5 that a software updating process is required, the general computer 1 requests the host computer 2 to transmit update software in step S8. After the transmission of the version information, the host computer 2 is in a request waiting state in step T5. When receiving a response notifying that no software updating process is required, the host computer 2 terminates the communication in step T8, and ends the operation. On the other hand, when receiving a request for transmission of the update software, update software held by the host computer 2 is transmitted to the general computer 1 in step T6.

After receiving the update software, the general computer 1 temporarily stores the update software on the HDD in step S9. When the reception of all the update software is completed, the general computer 1 notifies the host computer 2 that all the update software has been received in step S10. Until receiving this notification, the host computer 2 is in a reception waiting state in step T7, and repeats the transmission of update software, if necessary.

After the general computer 1 finishes

notifying the host computer 2 that the reception of all the update software is completed in step S11, the general computer 1 terminates the communication with the host computer 2 in step S11. Also, the general computer

5   1 rewrites and updates the software on the HDD with the update software in step S12. Further, the general computer 1 starts the "software update program" stored on the optical disk 10, thereby driving the optical disk drive device 9. Thus, the software in the region C of

10   the optical disk 10 is automatically rewritten and updated with the update software stored on the HDD in step S13. In other words, the software of the optical disk 10, which was distributed from the software distributor, is rewritten and updated to the latest

15   version. In the prior art, the recording operation on an optical disk was time consuming, but a high-speed recording operation can be performed on the optical 10 by the optical disk drive device 9. As the data rewrite time required for the optical disk 10 is shorter, it is

20   considerably advantageous that the software of the optical disk 10, which was originally distributed by the software distributor, can be rewritten and updated to the latest version.

[Second Example]

25   FIG. 4 is a flowchart of a case where a

software producer (or a software distributor)

distinguishes a software user with the inherent ID

information and distributes the optical disk 10 that

stores the predetermined inherent ID information and

5   that is accompanied by a user registration operation

(the host computer 2 is provided with a user information

database as to each user using the inherent ID

information), and where the optical disk drive device 9

used by the software user can be recorded and reproduced.

10   First, with the optical disk 10 being mounted

on the optical disk drive device 9, the software user

starts the software update program automatically or

through a predetermined operation on the general

computer. The communication device, which is

15 constituted by the communication line connecting device

5, the communication network 4, and the communication

line connecting device 6, is then controlled to connect

the general computer 1 to the host computer 2

corresponding to the software distributor of the optical

20 disk 10 in step S21. In response to this, the host

computer 2 confirms the connection with the general

computer 1 of the user in step T11.

Once in a connected state, the "transmission

program" stored on the optical disk 10 is started so as

25 to automatically transmit the inherent ID information

allocated to the optical disk 10 to the host computer 2

via the communication device, which is constituted by

the communication line connecting device 5, the

communication network 4, and the communication line

5   connecting device 6, in step S22. Upon receipt of the

inherent ID information, the host computer 2 performs a

receiving operation of the inherent ID information in

step T12. The host computer 2 then inquires about the

received inherent ID information from the user

10 information database, and performs an ID authentication

process to determined whether or not the received

inherent ID information has been properly set by the

software distributor in step T13. If the authentication

judgment result does not indicate that the received

15 inherent ID information is proper information, the

communication is terminated in step T18, and the

operation comes to an end. On the contrary, if the

authentication judgment result indicates that the

received inherent ID information is proper information,

20 the host computer 2 transmits the result to the general

computer 1, and determines whether or not a software

updating process is required and can be permitted by

comparing the software version information already

distributed to the software user having the inherent ID

25 information with the latest version information of the

corresponding software in step T14. If it is determined that no software updating process is required as a result of the comparison, the communication is terminated in step T18, and the operation comes to an

5   end. On the contrary, if the software already distributed to the software user is older, and a software updating process is allowed by the software producer (the host computer 2), a software updating process is required, and the update software is

10 transmitted to the general computer 1 in step T15.

Meanwhile, if the general computer 1 receives an authentication judgment result indicating that the received inherent ID information is not proper information, the communication is terminated in step S26,

15 and the operation comes to an end. On the contrary, if the authentication judgment result indicates that the received inherent ID information is proper information, the general computer 1 waits for a judgment result as to necessity and allowability of a software updating

20 process in step S24. If no software updating process is necessary or allowed (for instance, in a case where a bill has not been settled), the general computer 1 notifies the host computer that no software updating process is necessary in step S25. The communication is

25 then terminated in step S26, and the operation comes to

an end. If a software updating process is required and
allowed, the general computer 1 performs a receiving
operation of the update software transmitted from the
host computer 2 in step S27. The update software is

5   temporarily stored on the HDD in step S298. When the
reception of the whole update software is completed, the
general computer 1 notifies the host computer 2 that the
reception of the update software has been finished in
step S29. Until the notification of the reception

10 completion, the host computer 2 is in a waiting state
for the notification in step T16, and repeats the
transmission of the update software as long as it is
necessary.

   After the notification of the reception

15 completion of the update software in step S29, the
general computer 1 terminates the communication with the
host computer 2 in step S30, and rewrites and updates
the software on the HDD in accordance with the update
software in step S31. Further, the general computer 1

20 starts the "software update program" stored on the
optical disk 10, thereby actuating the optical disk
drive device 9. Thus, the software in the region C
stored on the optical disk 10 is automatically rewritten
and updated in accordance with the update software

25 stored on the HDD in step S32. In this manner, the

software of the optical disk 10 distributed by the
software distributor is rewritten and updated to the
latest version.

If accounting procedures are necessary for
5   rewriting or update software, a software user makes the
payment in advance, and the host computer 2 records
information that indicates the settlement of the account
and the allowance of the updating of the software on the
user information database. If no payment has been made,
10   the updating of the software of the software user is
recorded as "unallowable" on the user information
database. Accordingly, no software updating process
cannot be performed.

[Third Example]

15   FIG. 5 is a flowchart of a case where the
optical disk drive device 9 used by the software user is
a read-only drive regardless of whether or not the
software producer (the software distributor)
distinguishes each software user. However, the host
20   computer 2 is provided with a user information database
as to each user using inherent ID information.

In this case, each software user takes the
optical disk 10 to a location at which the disk rewrite
device 3 is located, and rewrites and updates the
25   software with the disk rewrite device 3.

The optical disk 10 is inserted into the disk
rewrite device 3 to start the operation. The
communication device (constituted by the communication
line connecting device 7, the communication network 4,

5   and the communication line connecting device 6) is then
controlled so as to connect the disk rewrite device 3 to
the host computer 2, which is the distributor of the
optical disk 10 in step P1. The host computer 2 in turn
confirms the connection with the disk rewrite device 3

10 in step T21.

Once in a connected state, the disk rewrite
device 3 starts the "transmission program" stored on the
optical disk 10, so that the inherent ID information
allocated to the optical disk 10 is automatically

15 transmitted to the host computer 2 via the communication
device (constituted by the communication line connecting
device 7, the communication network 4, and the
communication line connecting device 6) in step P2.

In response to the transmission process, the

20 host computer 2 performs a receiving process of the
inherent ID information in step T22. The host computer
2 then makes an inquiry about the received inherent ID
information, and performs an ID authentication process
to determine whether or not the received inherent ID

25 information is information properly set by the software

distributor in step T23. If it is determined that the received inherent ID information is not proper information, the communication is terminated in step T28, and the operation comes to an end. If the received

5   inherent ID information is proper information, the authentication judgment result is transmitted to the disk rewrite device 3, and determines whether or not a software updating process is necessary by comparing the version information of software already distributed to

10   the software user having the inherent ID information with the latest version information of the corresponding software in step T24. If it is determined that a software updating process is unnecessary as a result of the comparison, the communication is terminated in step

15   T28, and the operation comes to an end. On the contrary, if it is determined that the software already distributed to the software user is older, the host computer 3 transmits information of a necessary amount of charge to the software user, and sends the update

20   software to the disk rewrite device 3 in step T25.

Meanwhile, the disk rewrite device 3 receives the authentication judgment result in step P3. If the authentication judgment result indicates that the inherent ID information is not proper information, the

25   communication is terminated in step P11, and the

operation comes to an end. If the authentication
judgment result indicates that the inherent ID
information is proper information, the disk rewrite
device 3 waits for information of the necessity of a
5   software updating process and the amount of money
required in step P4. If no updating process is
necessary, the disk rewrite device 3 notifies the host
computer 2 that no updating process is required in step
P5, and terminates the communication in step P11. The
10   operation then comes to an end. On the contrary, if an
updating process is required, the disk rewrite device 3
displays the information of the amount of required money
transmitted in accordance with the database in the host
computer 2 in step P6, and then waits for a payment made
15   through the accounting device 8 in step P7. If the
payment is cancelled, the communication is terminated in
step P11, and the operation comes to an end. If a
payment is confirmed, the disk rewrite device 3 performs
a receiving process of the update software transmitted
20   from the host computer 2 in step P8, and automatically
rewrites and updates the software in the region C on the
optical disk 10 with the update software in step P9.
Thus, the software of the optical disk 10 distributed by
the software distributor is rewritten and updated to the
25   latest version. When the reception of the update

software is completed, the disk rewrite device 3

notifies the host computer 2 that the reception of the

update software is completed in step P10. The disk

rewrite device 3 then terminates the communication with

5   the host computer 2 in step P11, and the operation comes

to an end.

After the rewrite and update process by the

disk rewrite device 3 is completed, the software user

takes the optical disk 10 back, and deletes the former

10   version of the software in the general computer 1, if

necessary. The software user then uses the rewritten

and updated optical disk 10, and introduces the software

of the latest version in the normal procedures.

[Fourth Example]

15   FIG. 6 is a flowchart of a case where the

software producer (the software distributor)

distinguishes each software user with inherent ID

information, and distributes the optical disk 10, on

which the predetermined inherent ID information is

20   recorded. When distributing the optical disk 10, the

software distributor also carries out a user

registration operation. Therefore, the host computer 2

is provided in advance with a user information database

that utilizes the inherent ID information.

25   If a trouble is caused while the software on

the HDD corresponding to the software stored on the

optical disk 10 is used in the general computer 1, the

software user tries to inquire for a solution from the

software producer, and starts the "trouble information

5   program" stored on the optical disk 10.

Once this program is started, the

communication device, which is constituted by the

communication line connecting device 5, the

communication network 4, and the communication line

10   connecting device 6, is controlled so as to connect the

general computer 1 to the host computer 2, which is the

software distributor of the optical disk 10 in step S41.

In response to this, the host computer 2 confirms the

connection with the user computer in step T31.

15   Once in a connected state, the general

computer 1 starts the "transmission program" stored on

the optical disk 10, thereby automatically transmitting

the inherent ID information allocated to the optical

disk 10 to the host computer 2 via the communication

20   device constituted by the communication line connecting

device 5, the communication network 4, and the

communication line connecting device 6 in step S42.   In

response to the transmission process, the host computer

2 performs a receiving process of the inherent ID

25   information in step T32.   The host computer then makes a

request for the received inherent ID information from the user information database, and performs an ID authentication process to determine whether or not the received inherent ID information is information properly

5   set by the software distributor in step T33. If the received inherent ID information is not proper information set by the software distributor, the communication is terminated in step T35, and the operation comes to an end. If the received inherent ID

10   information is proper information, the host computer 2 transmits the authentication judgment result to the general computer 1.

Meanwhile, the general computer 1 receives the authentication judgment result in step S43. If the

15   authentication judgment result indicates that the received inherent ID information is not proper information, the general computer 1 terminates the communication in step S47, and the operation comes to an end. If the authentication judgment result indicates

20   that the received inherent ID information is proper information, the "computer information acquiring program" stored on the optical disk 10 is started so as to automatically acquire information of the general computer 1 in step S44. For instance, the version

25   information concerning the hardware actually connected

to the general computer 1, the OS software, and files,
is obtained. The general computer 1 then displays a
message to prompt the user to input the details of the
trouble, and waits for the user to input them in step

5   S45. After a notification of completion of the input,
the "transmission program" stored on the optical disk 10
is started so as to automatically transmit the details
of the trouble inputted by the user, as well as the
information concerning the general computer 1

10   automatically obtained, to the host computer 2 in step
S46. The communication with the host computer 2 is then
terminated in step S47, and the operation comes to an
end. In this manner, the information of the general
computer 1 and the details of the trouble can be easily

15   and accurately obtained, regardless of the user's
knowledge of the software. Accordingly, troubles can be
easily dealt with by both the software user and the
software producer, and swift and appropriate solutions
can be attained.

20   As described so far, the optical disk 10, on
which data can be recorded, is used as an optical disk
for distributing software, and the general computer 1
reads the optical disk 10. The transmission program and
the software update program on the optical disk 10 are

25   then started so as to automatically transmit the

inherent ID information allocated only to the optical

disk 10. Based on the ID authentication judgment result,

the update software is received from the host computer 2,

so that the software on the optical disk 10 can be

5 automatically rewritten and updated. Thus, the software

on the distributed optical disk 10 can be automatically

updated to the latest version, thereby making the

optical disk 10 more user-friendly. For instance, even

if there is no major changes in software between a

10 previous version and the latest version, it is

unnecessary to perform a complicated operation to delete

the previous version and introduce the latest version,

or to introduce the latest version to another computer.

The latest version can be introduced in the conventional

15 manner by simply using the updated optical disk 10.

Also, in a case where major changes are made to the

previous version, the software on the optical disk 10

should be simply rewritten and updated. Thus, the

latest version can be promptly obtained. In those

20 processes, the host computer 2 can determine from the

non-rewritable inherent ID information whether or not

each user is a proper user, and provide the update

software only to proper users. Thus, improper or

illegal usage of software can be prevented.

25 The present invention is not limited to the

specifically disclosed embodiments, but variations and modifications may be made without departing from the scope of the present invention.

The present invention is based on Japanese patent application No. 2000-050972 filed on February 28, 2000, the entire contents of which are hereby incorporated by reference.